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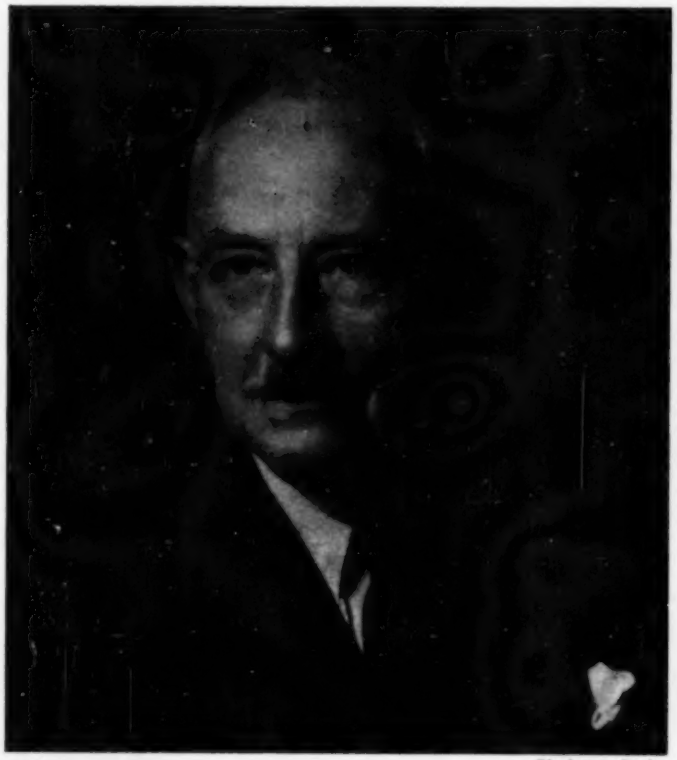

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DR. HANS T. CLARKE

Receives New York Chapter Honor Scroll

(See page 353)

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SCHEDULED FOR EARLY PUBLICATION

IN THIS ISSUE

TO COME IN OCTOBER

Dr. M. L. Crossley, long associated with chemical industry and former president of the AIC, will set forth the problems facing those who plan research programs and tell how to plan them realistically to avoid the unorganized experimentation sometimes indulged in under the guise of research. The New England Chapter's Honor Scroll award to Prof. Avery Ashdown of Massachusetts Institute of Technology will be reported. Benjamin Sweedler will explain "Social Security — Retirement Benefits for Those Not Adequately Covered by Existing Retirement plans." And there will be other news and reports about professional matters.

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EDITORIALS

The Problem of the Uncommon Man

Dr. Donald B. Keyes

President, The American Institute of Chemists, Inc.

YOU, a member of the INSTITUTE, represent an excellent example of the Uncommon Man. (Who is this mythical creature we have read so much about, the Common man?)

Herbert Hoover on his eightieth birthday said:

"The greatest strides of human progress have come from Uncommon Men and Women" . . . and "The imperative need of this nation at all times is the leadership of the Uncommon Men and Women. We need men who can not be intimidated, who are not concerned with applause meters nor those who sell tomorrow for cheers today."

Kipling recognized the Uncommon Man:

". . . . they asked me how I did it,
And I gave them the scripture text
'You keep your light so shining
A little in front o' the next.'
They copied all they could follow,
But they couldn't copy my mind,
And I left 'em sweating and stealing
A year and a half behind."

The Uncommon Man is evidently the "Creator and the Producer" and by deduction I assume the Common Man is the "Parasite and the Drone."

We can leave to the politician the product of his imagination, the Common Man, and let him do with his creature what he may, but how about the timely forgotten man, the uncommon fellow?

The law of probability indicates that not all Uncommon Men and Women in America are members of THE AMERICAN INSTITUTE OF CHEMISTS, there must be a few others somewhere.

The problem is how do we locate these outsiders, these Uncommon Men or Women, and what to do with them?

Karl Herstein has put his ideas into practice here in the New York Chapter, but I will leave it to him to tell you.

How about your local A.C.S. or A.I.Ch.E. Chapter, have they not a few characters who are interested in the "humanities?"

How about the physicists in your community? Now that the A-bomb has softened them up a bit you might find one who would enjoy discussing non-scientific matters.

It is statistically possible that you might even locate an economist who speaks English and does not believe in robbing the creator and giving to the parasite or the bum.

The question is do you not know some uncommon man or woman in your community who would help you make your INSTITUTE Chapter meetings more interesting to all?

The Situation on Occupational Deferment

Dr. Norman A. Shepard, F.A.I.C.

Chairman, Committee on Manpower, The American Institute of Chemists, Inc.

As discussed by President Keyes editorially in the August issue of The Chemist, you were asked to use your influence in your community to educate your non-technical friends about the need for draft deferment for chemists and engineers in key positions.

As most of us know, the continuing rapid decline in the number of these deferments emphasizes with alarming clarity the extent to which selectivity in call to active duty is being replaced by Universal Military Service. Occupational deferments, exclusive of agricultural deferments, have dropped in number from 25,797 as of July 1, 1953, to 17,318 as of June 30, 1954. Specialized manpower in all categories, including chemists and chemical engineers, is being inducted with little or no regard to the importance of their civilian occupations, and deferments terminated even though the deferees were still engaged on projects originally considered of sufficient importance to warrant deferment, projects on which they have become even more proficient as time went on. Little or no attention is being given to the statement in the directive of the Office of Defense Mobilization that such deferment is legally continued, regardless of its length, so long as the individual is still working on the project of importance to the health, safety and security of the nation. As a deferee approaches his twenty-sixth birth date, he is almost invariably called to military service, though in initially accepting deferment, his military obligation is extended to age thirty-five. Hence deferment beyond age twenty-six does not in any sense constitute exemption.

The seriousness of the situation rests not alone in the two-year loss to science of these young people during the period for many of them of greatest creativity, but also in the fact that they are being removed from that reserve of technically trained personnel which should be immediately available in time of national emergency. Past experience has shown that once inducted they cannot be corraled with any speed to meet the scientific needs of such an emergency. And it is only a very small percentage of those scientists inducted who are put on military assignments which utilize any appreciable percentage of their specialized training and potentialities. It appears that less and less importance is being attached to utilizing our specialized personnel where it can do the most good for the defense of our country. And these deferred men are now being preferentially taken: And this in spite of the fact that the bank of young men in the eighteen-and-a-

half through twenty-five year age group is very large and more than sufficient to meet the present selective service monthly quotas! In fact, it is said that many of these young men are begging to be inducted at once, so that they may get their military obligation completed, and then be free to plan their future civilian lives.

The illegality of the present deferment policy of "selective" service and the misinterpretation of Public Law No. 51 by that agency have been forcibly pointed out by the American Chemical Society. Fortunately the fallacy of universal *military* service is finding more and more public acceptance. Recently (June 28, 1954) the *New York Times* concluded an editorial on "Scientific Manpower" with the statement: "The concept of equality of sacrifice must yield to the basic security of our nation." So bad has been the disregard of Selective Service for specialized manpower that many of our young men in graduate school are not being permitted to complete their studies, even though their work is of high quality and they are close to completing the requirements for the degree.

Each and every one of us in the INSTITUTE has a duty and responsibility to raise his voice in protest against such wanton waste of specialized and scientific manpower. We must educate our friends, neighbors, and associates on the serious consequences of such policies, and help to create public sentiment against the continuation of them.

(Also see page 380)

Elected: Dr. Walter J. Murphy, Hon. AIC, editor, The American Chemical Society, and president of the Society of Business Magazine Editors, as president of the Torch Club of the City of Washington, D. C., for 1954-55. Stanwood Cobb of Chevy Chase Country School was named vice-president and William B. Lodder, M.A.I.C., circulation production manager for the American Chemical Society was re-elected secretary-treasurer.

Meeting Dates: Of The Chemical Institute of Canada: May 30-June 1, 1955, Chateau Frontenac Hotel, Quebec City. May 28-30, 1956; Sheraton-Mt. Royal Hotel, Montreal, Quebec. June 3-5, 1957, Hotel Vancouver, Vancouver, B. C. June 23-25, 1958, Royal York Hotel, Toronto, Ont.

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Some Experiences in the Training of Research Chemists

Dr. Hans Thacher Clarke, F.A.I.C.
College of Physicians and Surgeons, Columbia University

(Presented when the Honor Scroll of the New York AIC Chapter was awarded to him, May 20, 1954, in New York, N. Y.)

THOUGH my title is "Some Experiences in the Training of Research Chemists," there will be one self-imposed limitation, made necessary by the restricted nature of my background, which lies in the domain of what Dr. Conant, in his Nichols Medal address some twenty years ago, called "the pleasant art of organic chemistry." This is that everything I shall say relates primarily to research in that art; subsequently I should add a few words about biochemistry. The beautiful science of physical chemistry, in which the emphasis is on purely intellectual processes, transcends my own experience.

Ability in chemical research calls for specialized, inborn talents, without which no amount of scholastic training will serve to convert a student into an investigator any more than an unmusical person with a good voice can be trained into a successful singer. I wonder how widely this fact, obvious to all who have made research their principal interest, is recognized by instructors at the college level. We have often encountered college graduates with excellent grades in chemistry courses to whom chemistry has apparently been nothing more than a subject for memorization, like latin grammar. What a contrast can be afforded by other young chemists whose qualifications on paper may be far less impressive. Let us analyze some of the characteristics of the born investigator.

Perhaps the most obvious of these is infatuation with the subject. By no means a guarantee of talent, it is essential for happiness and success in research. It may have developed early or late in the formative years, but it is invariably present, in an intensity such that the idea of no other life work is acceptable.

Intellectual aptitude for chemistry is discernible in an ability to differentiate the most important from the less important among the main facts presented during training, and to assimilate these facts with a degree of retention proportional to their significance. This faculty cannot be inculcated didactically, though it can be fostered by competent instruction. Another criterion is scientific imagination, shown by the ability to correlate diverse information in apparently unrelated areas of the science. Of more specialized nature, but important, is the ability to recall, at a moment's notice and even after the lapse of years, the essential details of experi-

ments performed in the laboratory during training. Such visual memory, which must be coupled with a clear understanding of the underlying principles illustrated by the experiments, connotes the keenness of observation indispensable to an investigator.

In the selection of prospective graduate students it is not too difficult to evaluate these characteristics, with reasonable success, in an interview. My own practice is to try to find out not only what a candidate knows, but especially how he uses his knowledge. Presumably the same methods can be employed with equal success in interviewing applicants for junior positions in industrial research laboratories. There is no essential difference of techniques in chemical research in industry from that in academic institutions. On the basis of my own observations over some forty-five years, fourteen of which were in industry, I subscribe to the generally held opinion that the only important difference is that of motivation; the industrial research worker seeks to solve problems arising from the needs of production — for example, the synthesis of new products of predetermined type in order to meet specified requirements, or the establishment of conditions for optimal yield — whereas the academic worker seeks to add to the general store of knowledge. The operational methods are much the same, and when, as in the research laboratories of the more enlightened industrial concerns, such as the Eastman Kodak Company, the leaders of research teams are encouraged to devote part of their time to investigations of an academic character, the distinction practically disappears.

Parenthetically, the enlightened policy to which I have just referred has proved highly lucrative. More than one great industry has developed from some by-product of so-called "pure research" in an industrial laboratory.

I should like to emphasize that a chemist engaged in industrial work has not only a golden opportunity, but an obligation, to take a hand in contributing to the advancement of his science by training the men under his care. Free of time consuming didactic duties at elementary levels and having a relatively small number of younger men under his direction, he can guide not only their current work, but their development, more intimately than is generally possible in a university laboratory.

There is another essential characteristic needed for ultimate success in organic chemical research, namely manipulative ability, which is susceptible of development in individuals innately endowed. Experimental skill and scientific acumen by no means invariably accompany each other in equal measure, and their mutual relationship will determine the nature of the work for which a man is best fitted. Fortunately, in these days of team work, there is scope for those who possess either of these qualities

in high degree. In the training of embryo organic chemists the mental factor is readily evaluated, but native dexterity can be assessed only by close observation of a worker in action in the laboratory. Years ago, while developing the laboratory manufacture of research organic chemicals in Rochester, I made an incidental observation that proved quite useful in the assignment of work to the individual operators. This was a positive correlation between the ability to secure good yields of pure products from difficult reactions and success in glass-blowing. No doubt other criteria relating keenness of observation to muscular coordination would have been available but this one chanced to be readily at hand in the regular line of duty. Another generality also emerged. In 1918, when the department of synthetic chemistry was first organized, suitably trained men were so scarce that the staff initially assembled consisted entirely of young women with college training in organic chemistry. The enthusiasm and assiduity displayed by the girls were admirable, but the incidence of laboratory fires and other mishaps was disturbingly high. When after a year or two it was possible to engage young men for the work, the female element was gradually replaced. This change was accompanied, not only by a decline in the accident rate, but (somewhat to my surprise) by increased production, for the men proved able to carry on a larger number of preparations simultaneously. I have since gained the impression that there is a converse correlation between sex and ability to carry out multiple operations such as delicate analytical procedures. It seems as if, in general, women are more skillful with their fingers and men with their hands.

The Exchange of Ideas

There seem to be two schools of thought with regard to the internal arrangement of laboratories. In some institutions research students are segregated in separate rooms or placed in small groups; in others they are all placed together in large laboratories. I am convinced that the latter disposition is the more advantageous. Continual contact and free exchange of ideas should be facilitated. Students can learn even more from one another than from their preceptors. Indeed, the training process often takes the form of a reversible equilibrium. It is a pleasure to acknowledge my indebtedness to the head of the department of biochemistry of Yale University for the valuable information he gave me on the theory and practice of oxidation-reduction potentials while he was working, ostensibly under my guidance, on his doctoral research. In the laboratory, age can learn from youth in other ways. The chairman-elect of the New York Section of the American Chemical Society, when he was nineteen, spent a summer in my laboratory. Being entirely satisfied with his performance, I was surprised when he said, "Dr.

Clarke, if you didn't jump on me so hard, I think I'd do better work, for I have a rather nervous temperament." It was a lesson I have never forgotten, and I have since then done my best to avoid giving unintended displays of severity.

I should like to point out one aspect of the relationship between academic research and industry. In 1911, I entered Emil Fischer's laboratory, in Berlin, to carry out some independent research work. Shortly after arrival, I was advised by one of Fischer's assistants not to ask other people what they were working on. This was so contrary to the tradition in University College, London, where I had worked until then, that I sought an explanation. It appeared that in Germany it was customary for academic organic chemists, as soon as they reached a certain eminence, to enter into agreement with one of the various chemical manufacturing firms to grant exclusive rights on any patentable discoveries made in their university laboratories. The policy of secrecy which inevitably developed from this system must surely have had an adverse effect on the training of young chemists in Germany at that time. Fortunately our American chemical industries and professors of chemistry have wisely avoided such a situation, but it is a danger against which we must all be on guard. Secrecy in research is attended by serious hazards, as many of us have learned since the Second World War.

The Training of Biochemists

Turning now to the training of biochemists, with which I have been particularly concerned during the past quarter of a century, I must point out that biochemistry is not truly a fundamental branch of chemistry, like organic, physical, or analytical chemistry, but is an "applied" science in which all of these branches are involved. Ideally, a well-rounded biochemical investigator should have had some familiarity with all of them, though in practice his scientific tastes will determine the relative emphasis he lays on each. Formal biochemical training, which must also include several of the fields of biology, is necessarily wider than that required for research in one of the branches of "pure" chemistry and takes more time. The following data culled from my files will give an idea of the number of years of study and doctoral research spent by graduate students in the department of biochemistry in Columbia University: During the past twenty-five years, Columbia has awarded the degree of Ph.D. in biochemistry to eighty students. Of these, the sixty-one who received all their training in our University spent an average 5.5 years with the following distribution:

4	years:	9 students
5	years:	25 students
6	years:	16 students
7	years:	9 students
over 7	years:	2 students

Quite a number of these were required to spend a year in practically full-time study in the department of chemistry before engaging in advanced work in biochemistry. Naturally, such delay has never been very welcome to our graduate students (who often refer to the 116th Street campus as "Siberia"), but they almost invariably have later expressed their appreciation of the temporary banishment. The nineteen graduate students who entered our Department of Biochemistry with advanced standing having completed graduate work in other universities, obtained their degree after an average of 3.5 years, ten of them taking 3 years, and nine taking 4 years.

A few of our students, particularly those who had majored in chemistry, have needed supplementary instruction in biological subjects. Every student has been required to take a full course in human physiology.

Training in research always includes guidance in the organization of experiments as well as in the technical approach to a problem. This necessarily involves frequent and time-consuming discussion between a student and the sponsor of his work, and every professor must learn by experience the maximal number of candidates for whom he can profitably be responsible at any time.

An important function of a research mentor, especially in the later stages of the training process, is the inculcation of orderly habits of expression. The composition of scientific papers with accuracy, clarity and economy of words is no easy task. A research student who has been living with his problem for many months knows quite clearly what he wants to say in his dissertation, but when he sets it down fails to recognize that a written phrase may be ambiguous or even convey an erroneous idea. Time devoted to helping the inexperienced in this matter is well spent. On the other hand, I have always secretly grudged the time given to instruction in grammar, and have wondered whether the average high school teacher of English has not become so involved in the minutiæ of her subject that she is unable to see the woods for the trees.

The maintenance of graduate students of biochemistry during their long period of training is a matter of constant concern, for it is the duty of a university to provide the community with well-trained scholars of the highest caliber. As ability in research is apparently not genetically linked with parental ability to pay tuition, many of the carefully selected students require financial support. In the past this was largely provided by teaching assistantships; during the first few years after the war the GI Bill of Rights met the need, and now any really gifted graduate student can almost count on a predoctoral fellowship from a government agency or private foundation. This admirable national fellowship program has one drawback; doctoral candidates gen-

erally prefer to spend their time in work towards their degree rather than give up some of it in teaching. This is understandable, but it is a pity that they should forego the opportunity to gain teaching experience.

The majority of freshly graduated biochemists take academic positions, and a much smaller number find openings in research institutions without formal teaching programs. At the present time very few of our graduates enter the field of industrial research. I do not know why this should be: possibly it is due to mere tradition, to the classical yearning, for unprogrammed research discussed by my honored colleague Louis Hammett in his stimulating address before the American Chemical Society at Kansas City. However, I suspect that a change in trend may soon take place. Industry is taking increasing advantage of the utility of biochemical processes which in some instances, such as the preparation of antibiotic substances, constitute the only available means of production. The science of biochemistry is undergoing so rapid a growth that its increased application to large scale operations seems inevitable, and thus will require the services of increasing numbers of well trained biochemists.

Presentation to Dr. Clarke

DR. HANS T. CLARKE, F.A.I.C., of the College of Physicians and Surgeons, Columbia University, and former scientific attache at the U. S. Embassy in Great Britain, was presented with the sixth annual Honor Award of the New York AIC Chapter, May 20, 1954, at a dinner held at the Hotel Commodore, New York, N. Y., preceded by a reception sponsored by the Eastman Kodak Company.

Dr. Edgar G. Miller, Jr., dean of the Graduate Faculties at Columbia spoke in honor of Dr. Clarke, on the subject, "The Man and the Scientist." Dr. Grayson Kirk, president of Columbia, was represented by Prof. Louis P. Hammett, executive officer of the Department of Chemistry.

The scroll was presented to Dr. Clarke by Karl M. Herstein, retiring chairman of the New York Chapter. Dr. Clarke responded with "Some Experiences in Training Research Chemists."

Now executive officer of Columbia's Department of Biochemistry, Dr. Clarke served as research organic chemist with Eastman Kodak Company for fourteen years before joining the Columbia faculty in 1928. English-born, he attended University College, London, from which he received the B.S. and Sc.D. degrees. His previous U. S. government service includes work in the office of Scientific Research and Development and in the U. S. Public Health Service. In addition to his work in the dye industry

—C&EN

Karl M. Herstein, Dr. Edgar G. Miller, Jr., and Dr. Clarke.

and in penicillin production, Dr. Clarke has contributed to the study of amino acids and the determination of the constitution of vitamin B.

The citation to Dr. Clarke reads:

Esteemed for his scholarship,
Respected for his great ability,
Beloved for his warm heart,
And honored for his contribution to chemistry as a profession.

Progressing: Construction of the Torrance, California, plant of Carbide and Carbon Chemicals Company, according to H. B. McClure, F.A.I.C., company president. The plant will produce polyethylene and ethylene glycol.

Irradiation Services: Now made available by the AEC at its Materials Testing Reactor operated by Phillips Petroleuum Company in Idaho. Questions about the irradiation services should be addressed to Phillips Petroleum Co., Idaho Falls, Idaho.

New Position: For George D. Creelman, F.A.I.C., who is now technical service director of Bjorksten Research Laboratories, Inc., of Madison, Wisconsin. He was formerly research coordinator for the M. A. Hanna Company in Cleveland. .

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Some Phases of Education

Dr. Lewis Webster Jones
President, Rutgers University, New Brunswick, N J.

(Presented before the General Session of THE AMERICAN INSTITUTE OF CHEMISTS' ANNUAL MEETING, May 14, 1954.)

THE fact that THE AMERICAN INSTITUTE OF CHEMISTS has as its primary purpose the elevation of the profession of chemistry I take to mean also the elevation of these newer professions which not only cover but interlock the many kinds of chemistry with the biological sciences, mathematics, and physics — all so important to the development of our industrial civilization.

There exists a kind of anachronism in our contemporary society: These new professions that have developed in the latter part of the last century have created and continue to create the new knowledge by which our whole society lives. These are the dynamic elements of our civilization. The origin of the great progress we have made in industry, in public health, and in so many other fields may be traced to the new professions.

For example, the increasing longevity of life in this country, without disparaging the medical profession in any way, has really come about as a result of the application of the new sciences to the problems of medicine and health. The great achievements of industry also owe their origins to this new knowledge. In the 19th century, some of this came about as a result of isolated invention, but now we rely increasingly upon organized research in colleges, universities, and industry for the carrying on of our civilization's economic aspects.

Now while that is true, I think these newer professions have not enjoyed the prestige and, on the whole, the public esteem that some of the older professions occupy. The reason is directly tied to education and its relation to the professions.

Up until the second half of the 19th century, American higher education was largely in the hands of the independent colleges. These were evolving through the 17th and 18th century and were fashioned after the pattern of 17th and 18th century English education. The university is a fairly new thing in American life. It can be dated roughly from the introduction of the free-elective system at Harvard, the establishment of graduate study at Johns Hopkins and the development of the land-grant colleges and state universities.

Prior to that time, the American college had basically a literary curricula. But during the latter half of the 19th century there went on a tremendous struggle to get the new, developing subject of science into the

curriculum. There was naturally tremendous opposition on the part of the orthodox educators who wanted to stick to the basically literary curriculum. The great achievement of President Eliot, a chemist by the way, was the Harvard free-elective system. Not that the free-elective system in itself was so important (if you read the papers of President Eliot, you will see that he had little confidence in the ability of the undergraduate to choose his courses wisely) but President Eliot was greatly concerned with getting the new science into the university curriculum. He knew that if he had a free-elective system and allowed a substantial measure of choice to the students, some would go into science.

In the land-grant colleges and the state universities, there was a great movement, largely led by farmers and industrial workers, to put agriculture and "the mechanic arts" into the college curriculum along with the liberal studies.

As a result of those movements, some of our leading scholars went abroad to study. They came back and helped to found American graduate schools. That is the origin of our American universities and that is the beginning of the recognized profession that you represent. Even now the importance of these new professions is only slowly dawning on the consciousness of the general public.

I am tremendously concerned with this whole area of education which relates so intimately to professional status. The essence of a profession, a learned profession, is that it attracts to itself people of the highest intellectual ability; it teaches highly specialized knowledges and skills which are so important to our production process, and it develops along with this specialized knowledge, a broad basic educational background.

Specialization

In the evolution of our professional education in these fields we have made the mistake often called the mistake of overspecialization. I do not agree that it is overspecialization. I think that we needed to develop specialized knowledge. We must have people on the frontiers of these new sciences creating the new knowledge which we need and that requires specialization. The mistake which I think we have made was to develop that specialization without at the same time emphasizing sufficiently the basic and fundamental education needed along with it. We are rapidly recovering from that, but during the 1920's, and into the 1930's that was the mistake that our universities and technical institutions made: they did not include the basic studies along with their professional training.

I do think that the American Chemical Society and some of the other professional organizations, in their desire to develop high standards in their fields have not given equal encouragement to the development of basic studies along with this special-

ized work. I think high standards and a broadened base can go together and nothing will be lost. It is quite possible for us to devise a university curriculum to do both things. If we do not do both things, then the people in these specialized fields are not going to achieve their full professional status, nor are they going to get the full professional respect due them.

In recent years tremendous efforts have been made and are being made to balance this education. Massachusetts Institute of Technology has taken the leadership in this respect among the colleges of engineering, and the movement is going on in all our universities. This will have a profound effect upon the upgrading of the professions. In the case of these basic sciences, these newer professions, we are now attracting absolutely the ablest people to these fields. I happen among my other activities to be chairman of the Board of Trustees of the Educational Testing Service. The results of their tests indicate that the people who are right at the top in intellectual ability are the people who are going into chemistry, engineering, physics, and mathematics.

We need the kind of education which will enable people to continue their education throughout their lives, if we are going to achieve full professional status. That kind of education will give us people who can make the rapid adjustments which are so often necessary in the development of this dynamic industry of ours. As a matter of fact, I have been much interested in professional personnel in these fields. Some of the people who have changed from their specialties after they had left the university have made some of the most remarkable achievements. We have many examples of that. Some industries — certainly in the employment of engineers — are taking people who graduated in one branch of engineering and are deliberately putting them into the practice of another branch of engineering as a part of their on-the-job training. That means that industry and the universities have come to the conclusion that we need that degree of flexibility, that degree of human understanding, that kind of education which will permit people to make broad as well as small adjustments. We cannot be content with technical competence alone; we have to be conscious of the human and other problems involved in the practice of any profession.

The Passion for Security

That will do much to change some of our attitudes; for instance, the passion for security that has become almost an obsession. This desire for security has pervaded all our lives, and it seems simply extraordinary that in the realm of science, where you are eternally reaching out to new frontiers, the audacity which is required for scientific investigation could be in the hands of people who are afraid and who are preoccupied

with their personal and individual security. The two things just do not go together. A lot of this has to do with our attitude toward education. The job the industry and the colleges and universities have is to develop the kind of education that will create the professional consciousness needed to carry on these newer professions effectively.

As we take larger and larger numbers of students to be educated, we have been less effective in educating properly the highly endowed and highly talented student. We must find some way in our elementary and secondary education to select these people who are exceptionally endowed and who are going into those professions and start giving them the basic knowledge at a much earlier age. But, we are handicapped in doing just that because at this moment when this new knowledge has achieved its great success, the great passion for security has unfortunately afflicted the attitude of the general public toward education. That attitude must change.

You are going to have people who value their personal security more than anything else so long as the public attitude is fearful of making proper provision for education. I think the universities know how to do this job. The public schools and the private schools know how to do their job too, but they still have to have financial support and the good will and enthusiasm of the community to do it. I regard the fear which leads to this passion for personal security as an aspect of that same fearfulness on the part of the general public in facing courageously these educational problems.

Industrial Cooperation

I am delighted that industry is becoming increasingly aware of its responsibility to cooperate with the colleges and universities. But there are two things which have been difficult: it is good for universities to do some developmental research, but we must remember that the truly basic function of our universities in chemistry and the sciences is to carry on fundamental and basic research. Industry has often given us grants which we have enjoyed and were grateful for, but too often they have been restricted to purely developmental research. We can be of greater service to industry if industry will recognize that basic research is the major function of the university. Also, I think that some of the fellowship aid which is given to the universities has been too narrowly confined and too narrowly restricted. From my point of view, I would like to see more go to those young, talented boys who cannot get started in their freshman year. In my institution we have scholarships for about one out of three highly talented young men. These are young men who have met every screening test you can devise, yet we can give but one scholarship out of those highly qualified three and you can almost

flip a coin in some cases to make the decision, they are so close together. We need desperately more scholarships as well as more fellowships, if we are going to develop fully the talent which we have available in this country.

Opportunity for Youth

We read of the great development of science and engineering in the Soviet Union. I think, however, that we cannot really educate people except in a free society. People can develop to increase their effectiveness, but it is only in a free society that they achieve the scientific and professional development that we need. I am not afraid of the ability of America and the Western World to meet any challenge, if we can truly educate our people of high ability. We are not doing that now because we are not giving enough opportunity to our young people. The only way we can get rid of the passion for individual security which leads to a regimented society is by being sure that we are creating conditions of educational equality and equality of opportunity to young people. This is the only way we can achieve our full stature as a nation. I feel strongly that our attitude in this respect will affect the whole future of the profession and of industry.

We dare not try to buy security at the sacrifice of equal opportunity; by spending the majority of our public and other funds on security for old age and the helpless, etc., and neglecting opportunity for youth. The real wealth of this nation is the ability of our people, and the real achievement of the new sciences has come about through this basic resource. That is how we can create a great profession and how we can realize our destiny as a nation.

Appointed: Dr. Robert S. Aries, F.A.I.C., New York consulting engineer and adjunct professor of chemical engineering at Polytechnic Institute of Brooklyn, as American delegate to the convention of the Pan American Federation of Engineering Societies in Sao Paulo, Brazil, August 2nd to 6th. He represented the American Society of Mechanical Engineers and the Engineers Joint Council.

Committees of The American Institute of Chemists 1954-1955

THE following Committees will serve THE AMERICAN INSTITUTE OF CHEMISTS during the present fiscal year. AIC members may send matters which they wish to call to the attention of specific committees to the chairman of the Committee or to the secretary of the INSTITUTE for referral to the appropriate committee.

Executive Committee of the Board of Directors

Dr. Donald B. Keyes
Dr. Ray P. Dinsmore
Dr. Frederick A. Hessel
Dr. Lloyd Van Doren

Finance Committee of the Board of Directors

John H. Nair, chairman
Dr. Frederick A. Hessel
Dr. Donald B. Keyes
Dr. Lincoln T. Work

Nominations

Dr. Donald B. Keyes
Dr. Ray P. Dinsmore
Dr. Lloyd Van Doren
Dr. Stewart J. Lloyd
Dr. Leonard Rice
Dr. Lloyd A. Hall
Prof. Paul F. Bailey
Dr. A. W. Fisher, Jr.
Dr. H. W. Mackinney
John Kotrady
Dr. Theodore E. Gilbert
Dr. David M. Gans
Dr. Walter W. Thomas
Paul E. Reichardt
Dr. Kenneth W. Newman

Revision of Constitution

Benjamin Sweedler, chairman

Life Membership

Dr. M. L. Crossley, chairman

Qualifications

Dr. Donald Price, chairman
Karl M. Herstein
Dr. John L. Hickson
Dr. William L. Prager
Dr. William J. Sparks

Honorary Membership

Dr. Sidney D. Kirkpatrick, chairman
Dr. R. P. Dinsmore
Dr. Gustav Egloff
Dr. Donald B. Keyes
Dr. Foster D. Snell

Ethics

John H. Nair, chairman
Dr. Harry L. Fisher
Dr. Lloyd A. Hall
Dr. Harry N. Holmes
Dr. Donald Price

Patents

Anthony Deller, chairman

Professional Education

Dr. Harvey A. Neville, advisory

Manpower

Dr. Norman A. Shepard, chairman

Employer-Employee Relations

Dr. George L. Royer, chairman

Membership

Dr. L. T. Eby, chairman
Chester A. Amick
John H. Nair

Gold Medal

Dr. Foster D. Snell, chairman
Lawrence H. Flett
Dr. Donald B. Keyes
Dr. Lloyd Van Doren
Dr. Lincoln T. Work

Manual of Chapter Operation

Dr. Maurice J. Kelley, chairman

Public Relations

Percy E. Landolt, chairman

1955 Annual Meeting

Dr. Gustav Egloff, Honorary chairman
Dr. Roy C. Newton, Chairman
Dr. R. P. Dinsmore, Program Chairman

COUNCIL

OFFICERS

President, Donald B. Keyes
President-elect, Ray P. Dinsmore
Secretary, Lloyd Van Doren
Treasurer, Frederick A. Hessel

COUNCILORS

James B. Allison *New Jersey Chapter*
John R. Bowman, *At-Large*
Emmett B. Carmichael *Alabama Chapter*
C. C. Concannon, *At-Large*
Gustav Egloff, *Chicago Chapter*
Harry L. Fisher, *At-Large*
L. H. Flett, *Past President*
K. M. Herstein, *New York Chapter*
Harry N. Holmes, *At-Large*
H. O. Kauffmann, *Niagara Chapter*
Guy A. Kirton, *Ohio Chapter*
Harold A. Levey, *Louisiana Chapter*
John H. Nair, *At-Large*
Emil Ott, *At-Large*
Donald Price, *At-Large*
Paul E. Reichardt, *Washington Chapter*
M. Sittenfield, *Pennsylvania Chapter*
W. J. Sparks, *At-Large*
Raymond Stevens, *New England Chapter*
Charles L. Thomas, *At-Large*
R. W. Truesdail, *Western Chapter*
Albin H. Warth, *Baltimore Chapter*
L. T. Work, *Past President*

June Meeting

The 297th meeting of the National AIC Council was held June 16, 1954, at 6:00 p.m., at The Chemists' Club, 52 East 41st St., New York, N. Y. President Donald B. Keyes presided.

These officers and councilors were present: R. P. Dinsmore, K. M. Herstein, F. A. Hessel, D. B. Keyes, G. Kirton, J. H. Nair, E. Ott, D. Price, M. Sittenfield, W. J. Sparks, and L. Van Doren. A. W. Fisher, chairman of the New England Chapter; M. J. Kelley, chairman of the Committee on Manual of Chapter Operations; J. Kotrady, chairman of the New York Chapter; G. L. Royer, chairman of the Committee on Employer-Employee Relations; N. A. Shepard, chairman of the Committee on Manpower, and V. F. Kimball were present.

Mr. Herstein discussed plans for the AIC Luncheon to be held September 16th, for which the New York Chapter will act as host. He announced that the Chapter also plans a get-together meeting in October and a lecture meeting in December. In January, the Chapter will sponsor the meeting at which Honorary AIC Membership is presented to Dr. Milton C. Whitaker. In March a meeting for young chemists and Student Medal Presentations will be held. In May, the Chapter will present its Honor Scroll.

Mr. Kotrady announced that the AIC Luncheon will have as its speaker Dr. Wayne E. Kuhn on "Professional Standards and Attitude." Dr. E. J. Durham will be honorary chairman of the luncheon.

Dr. Fisher announced that the recent award of the New England's Honor Scroll to Prof. Avery Ashdown of M.I.T., was a most successful affair.

Mr. Sittenfield announced that the Pennsylvania Chapter plans a meeting on the role of women in chemistry, and a meeting on the responsibility of chemists in the introduction of chemicals into foods.

Mr. Kirton reported that the Ohio Chapter had held a most successful meeting on April 9th.

Mr. Nair reported that the New Jersey Chapter had been the successful host for the recent Annual Meeting.

The secretary presented a letter from Mrs. Horace G. Byers informing the Council that Dr. Byers' serious illness would require almost immediate presentation of Honorary Membership to him. Dr. Keyes offered to arrange this at the earliest possible time.

President Keyes discussed the importance of active chapters and the obtaining of ideas from individuals wherever possible, so as to get the best ideas for the work of the INSTITUTE.

New Committees for the coming year were announced. (See page 367).

The following new members were elected:

FELLOWS

Arden, Benjamin
Turco Produucts, Inc., 6135 S. Central, Los Angeles, California

Berenbaum, Morris B.
Thiokol Chemical Corp., Trenton 7, New Jersey

Bertozzi, Eugene R.
Thiokol Chemical Corp., Trenton 7, New Jersey

Holman, Emmette R.
Chief Chemist, Turco Products, Inc., 6135 S. Central Ave., Los Angeles, California

Johnson, Lester E.
Mathieson Chemical Corp., 745 5th Ave., New York 22, New York

Levens, Ernest
Assistant Director of Research, American Potash & Chemical Corp., 201 W. Washington Blvd., Whittier, Calif.

Partenheimer, Joseph E.
Atlas Supply Co., 744 Broad Street, Newark, New Jersey

Rosenstein, Ludwig
Consulting Chemist & Engineer, 111 Sutter St., San Francisco 4, California

Shields, Charles D.
3146 Rosemead Place, Rosemead, Calif.

Wiener, Tibor
North American Aviation, Inc., 12214 Lakewood Blvd., Downey, California

MEMBERS

Hess, Henry James
Socony Vacuum Oil Co., East Chicago, Indiana

Hester, Albert S.
American Chemical Society, Editorial Staff, 86 E. Randolph, Chicago 1, Illinois

REINSTATED TO FELLOW

Collier, Charles Vines, Jr.
Chief Chemist, Lone Star Brewing Co., 542 Simpson Street, San Antonio 6, Texas

Gorman, Leo I.
Anaconda Wire & Cable Co., East 8th Street, Marion, Indiana

Mulqueen, Michael Peter
James A. Jonas Products, Inc., Water Street, Walden, New York

REINSTATED TO ASSOCIATE

Florio, Gloria D.
21 Linden Avenue, Bronx 61, New York

RAISED FROM MEMBER TO FELLOW

Hollander, Harry B.
Master Dyer, A. Hollander & Son., Ltd., Montreal, Quebec, Canada

Berdick, Murray
Research Project Leader, Evans Research & Development Corp., 250 E. 43 St., New York 17, N. Y.

RAISED FROM FELLOW TO LIFE MEMBER

Young, David W.
Standard Oil Development Co., Linden, New Jersey.

Annual Report

1953-1954

Report of the Secretary

The National Council held seven meetings during the year with an average attendance of 12 officers and councilors.

The following actions upon membership were taken:

ELECTIONS

Fellows	134	
Members	25	
Associates	90	
Life	1	
Honorary	2	
Total		252

REINSTATEMENTS

Fellows	9	
Members	1	
Total	10	262

LOSS OF MEMBERSHIP

RESIGNATIONS

Fellows	58	
Members	16	
Associates	27	
Total		101

DROPPED

Fellows	45	
Members	7	
Associates	27	
Total		79

DECEASED

Fellows	12	
Honorary	1	
Total		13
Total Gain in Membership		262
Total Loss of Membership		193
Net Gain in Membership		69

TRANSFERS

Fellow to Honorary	4
Fellows to Life	1
Members to Fellows	3
Associates to Members	1

TOTAL MEMBERS:

	May 1, 1953	*May* 1, 1954
Fellows	1880	1906
Members	284	285
Associates	276	311
Life	35	37
Honorary	31	36
	2506	2575

This year we have welcomed 262 new members into the INSTITUTE.

Honorary Membership was conferred on the following Fellows: Francis J. Curtis and Dr. Ray P. Dinsmore. Honorary Membership was also conferred on Prof. Walter G. Whitman of Massachusetts Institute of Technology, and on Dr. J. C. Warner, the Gold Medalist for 1953.

Life Membership was conferred on Vera F. Kimball in recognition of twenty-five years of service to the Institute.

It is with deep regret that we record the following deaths, about which we were notified during the year:

Dr. Marston T. Bogert, Hon. AIC
LaVerne E. Cheney, F.A.I.C.
Dr. K. George Falk, F.A.I.C.
John Gaub, F.A.I.C., Charter Member
James T. Goff, F.A.I.C.
Gerald J. Leuck, F.A.I.C.
Leonard S. Levitt, F.A.I.C.
J. E. Lutz, F.A.I.C.
Dr. George D. Martin, F.A.I.C.
Henry F. Muer, Life Member
William B. Newkirk, F.A.I.C.
Dr. Charles L. Parsons, Hon.AIC.
Dr. Alfred M. Peter, Charter Member
Dr. Edwin R. Theis, F.A.I.C.

During this year the accelerated activities of the Chapters have been warmly encouraging. Chemists in Chapter areas can obtain much personal benefit from Chapter meetings through contacts and through group consideration of the problems affecting those in that area, as well as by contributing professional material to benefit all chemists.

The Pennsylvania Chapter was the eminently successful host for the 1953 Annual Meeting. The New Jersey Chapter is host for this meeting. Chicago will be host for the 1955 meeting, and Washington for 1956. The Chicago, New York, New Jersey, Ohio, and Western Chapters have held some outstandingly fine meet-

ings on professional subjects this year. The New York Chapter established its own *Newsletter* to be issued from time to time. The Louisiana Chapter is awarding its first Honor Scroll this May. Other Chapter activities will appear in the reports to be presented in later issues of THE CHEMIST.

The name of the Los Angeles Chapter of the INSTITUTE was changed to Western Chapter, so as to include the area actually covered by the Chapter.

The National Council considered many subjects that were brought to its attention by Chapters, individual members, and others. Many of these were referred to the appropriate committee, or a committee was appointed to consider them. A Committee on Public Relations, with Percy E. Landolt as chairman, to consider a long-range Public Relations program for the INSTITUTE was appointed and will report progress at this meeting. A special committee was appointed to cooperate with the Department of Agriculture, headed by Dr. Albert L. Elder, in response to a request by the Secretary of Agriculture. A Committee to Prepare a Manual of Chapter Operations was appointed, under the chairmanship of Dr. Maurice J. Kelley, to provide a means to maintain continuity and unified operation of Chapters, and a first-draft has already been prepared. A Committee on Revision of Constitution and By-laws, headed by Benjamin Sweedler, has prepared a revision of the Constitution to be voted on today. The Committee on Manpower under Dr. Donald B. Keyes, has kept in close contact with the manpower situation and has reported at each Council Meeting.

Various standing committees of the INSTITUTE were especially active and have brought forth some fine professional contributions. One of these is the Panel on Education, prepared by Dr. Harvey Neville's Committee on Education, being presented at this Annual Meeting. Another is the Panel on the Legal Aspects of a Chemist's Life, also presented at this Annual Meeting, by the Committee on Employer-Employee Relations, headed by Dr. George L. Royer. This Committee is also submitting a proposed contract for chemists. The Committee on Membership, under John N. Hair, has screened lists and composed letters to be sent to specially qualified chemists and chemical engineers to tell them about the INSTITUTE and its activities.

Several members gave their time to serve as delegates from the INSTITUTE to various educational meetings, among them Dr. Gustav Egloff, past president of the INSTITUTE, who represented both the AIC and the ACS at the meetings of the Chemical Society of Japan in Tokyo last fall.

The correspondence with the Secretary's Office has been heavy this year as members, non-members, and students, requested professional or vocational information.

A "Current Activities" report was prepared in the Secretary's office and mimeographed to be sent out with the Council Minutes to keep Councilors informed about recent appointments or activities. Copies of this report were also sent to the chairmen of the Chapters so that they could keep their members informed.

We are grateful to the many members of the INSTITUTE who have given generously of their personal time and effort through Committee, Chapter, and other service, to advance the professional status of chemists. We are especially grateful to retiring President Work for his diligent and unceasing efforts toward the betterment of chemists during his term of office.

Appointed: Martin B. Williams, F.A.I.C., formerly chief chemist of the U.S. Army's Far East Criminal Investigation Laboratory in Tokyo, Japan, as director of research of the Thomas Alabama Kaolin Co., of Baltimore, Md., and Hackleburg, Alabama.

AIC Activities

C. P. Neidig, F.A.I.C.

Chicago Chapter

Chairman, Dr. Lloyd A. Hall
Vice Chairman, Harold M. Coleman
Chairman-elect, Clifford A. Hampel
Secretary, John Krc, Jr.
Armour Research Foundation, 10 W. 35th St., Chicago 16, Ill.
Treasurer, Albert S. Henick
National Councilor, Dr. Gustav Egloff

Honor Scroll Awarded to Dr. Urey

Prof. Harold C. Urey will be awarded the Honor Scroll of the Chicago AIC Chapter at a testimonial dinner at the Furniture Mart, October 8, 1954. Prof. Malcolm Dole, professor of physical chemistry at Northwestern University, will speak on "Harold C. Urey, Politics and the Man." Prof. Willard F. Libby, professor of chemistry, Institute for Nuclear Studies, will discuss "Harold C. Urey, the Scientist."

Prof. Urey received the B.S. in 1917 from the University of Montana, the Ph.D. in 1923 from the University of California. Since then he has received Honorary Doctor of Science degrees from Princeton (1935), University of Montana (1935), University of Newark (1939), Columbia University (1946), Oxford (1946), Washington & Lee (1948), University of Athens (1951), McMaster University (1951), Yale (1951), and Indiana (1953). He received the Nobel Prize in chemistry in 1934 for his discovery of heavy water, and in the same year, the Willard Gibbs Medal. He holds the Davy Medal of the Royal Society of London (1940) and the Franklin Medal of the Franklin Institute (1943). In 1947, he was elected a foreign member of the Royal Society of London.

Since the war Prof. Urey has been an active protagonist of the peacetime applications of atomic energy. He has entered into a wholly new field of research, the chemistry and physics of the solar and cosmic systems. He has formulated a hypothesis for the formation of the earth and set up an isotopic thermometer for measuring the temperature of ancient climates.

The Chicago Chapter Honors Prof. Urey

The Chicago AIC Chapter will award its 1954 Honor Scroll to Prof. Harold C. Urey, Nobel Laureate, at a dinner to be held at the Furniture Mart, Chicago, October 8, 1954.

The Scroll recognizes not only Dr. Urey's great professional achievements, but also his "effective work and active devotion to the thesis that scientists have obligations to society as citizens that are co-equal to their obligations as scientists."

He has served on the faculty of the University of Montana, 1919-1921; Johns Hopkins University, 1924-1929; Columbia University, 1929-1945, and is presently at the Institute for Nuclear Studies of the University of Chicago.

New York Chapter

Chairman, John Kotrady
Vice Chairman, Jack Dollinger
Secretary-Treasurer, Richard L. Moore
Foster D. Snell, Inc., 29 W. 15th St., New York 11, N. Y.
National Councilor, Karl M. Herstein

Detective to Speak on "Science Vs. Crime"

Science versus Crime will be the subject of the talk by Detective James W. Osterburg of the New York City Police Department Crime Laboratory at a dinner meeting of the New York Chapter, Thursday, October 14th. The meeting, open to the public, will be at the New York Times dining room, 229 West 43rd St., at 7:30 p.m. The dinner will start at 6 p.m.

The speaker is co-author of *An Introduction to Criminalistics,* a widely-used reference book on scientific police methods. A graduate of Brooklyn College, he has been with the New York City Police Department since 1940. He is a captain in the U. S. Army Reserve, and in 1952 was commanding officer of the 497th Crime Laboratory, Corps of Military Police. He has lectured widely on scientific methods in the investigation of crime.

John Kotrady of the Texas Company, chairman of the New York Chapter, will preside at the meeting, which will include

a question and answer period after the talk.

Detective Osterburg will discuss the functions of a crime laboratory, and will give case histories. He will describe how blood stains, fingerprints and other impressions are used as clue materials. Among his topics will be ultraviolet, infrared and x-ray photography, ballistics, and document examination. Drunken driving tests and narcotics will come in under analytical chemistry and modern instrumentation.

Reservations may be made by writing or calling Shepherd Stigman, 29 W. 15th St., New York 11, N. Y. (WA 4-8800). Guests are welcome.

Western Chapter

Chairman, Dr. Kenneth W. Newman
Chairman-elect, Thomas J. Rollins
Vice Chairman, Gerald I. Gruber
Treasurer, Dr. Frederick G. Sawyer
Co-Secretaries: Alfred J. Webber
Braun Corp., 2260 E. 15th St., Los Angeles 21, Calif.
Thomas J. Kehoe
4301 Yosemite Way, Los Angeles 65, Calif.
National Councilor, Dr. Roger W. Truesdail

Honor Scroll and Student Awards

The final meeting of the 1953-54 season contained the presentation of student awards to outstanding graduating chemists from the Western universities, followed by a talk by Dean R. Vivian of the University of Southern California. The speaker was then presented with the Chapter's Honor Scroll in recognition of his outstanding work in his profession and most recently with the Mutual Security Agency in Asia. (This award will be featured in the November issue of THE CHEMIST.)

Dr. Romeo P. Allard presented awards to the following student chemists:

F. C. Anson, California Institute of Technology
L. E. Bruce, Pepperdine College
K. D. Carlson, University of Redlands
D. M. Grant, University of Utah
Georgia Grupe, Mt. St. Mary's College
Lillian Hampton, Immaculate Heart College
D. R. Herschbach, Stanford University

K. Olivier, Loyola University
D. L. Ornellas, University of Santa Clara
R. A. Pierotti, Pomona College
R. H. Siegel, Oregon State College
F. B. Baker, University of Southern California
B. B. Owens, Whittier College
Nancy Van Law, Occidental College

Will You Come

Sept. 16, 1954. AIC Luncheon during ACS meeting in New York. 12:15 o'clock. The Baroque Room, The Brass Rail, 100 Park Ave., New York 20, N. Y. Chairman, John Kotrady. Speakers: Dr. E. J. Durham, Honorary Chairman, "A Message of Welcome." Dr. W. E. Kuhn, The Texas Company, "Professional Standards and Attitude."

Sept. 16, 1954. Meeting of the AIC National Council and Board of Directors. The Chemists' Club, 52 East 41st St., New York, N. Y.

Oct. 8, 1954. Chicago Chapter. Furniture Mart. Dinner. Award of Chapter's Honor Scroll to Prof. Harold C. Urey. Speakers: Prof. Malcolm Dole, "Harold C. Urey, Politics and the Man"; Prof. Willard F. Libby, "Harold C. Urey, the Scientist." Acceptance Address, Prof. Urey, "Scientists, Secrets and Security." For information, John Krc, Jr., Armour Research Foundation, 10 W. 35th St., Chicago 16, Ill.

Oct. 14, 1954. New York Chapter. The New York Times Dining Room, 11th Floor, 229 W. 43rd St., New York, N.Y.

Dinner 6:00 p.m. Group Singing, Dr. Henry B. Hass. Speaker, Detective James Osterburg, New York City Police Department, Crime Laboratory, "Science vs. Crime." Question and Answer Period. "Auld Lang Syne," Richard L. Moore. Presiding chairman, John Kotrady. All interested are welcome. Reservations ($2.75), Shepherd Stigman, Foster D. Snell, Inc., 29 West 15th St., New York 11, N. Y. .

Dec. 2, 1954. New York Chapter jointly with New York Section of the American Chemical Society. Carbide Cafeteria, 30 E. 42nd St., New York 17, N. Y. Dinner 5:45. Speaker, Allen Sack, Associate Director, Speed Reading Institude, "Speed Reading." Everyone present will participate in a speed reading demonstration. Question and answer period. Presiding chairman, John Kotrady. Reservations: Dr. John A. King, Warner-Chilcott Research Labs., 113 W. 18th St., New York 11, N. Y.

Jan. 20, 1955. New York Chapter. East Ballroom, Hotel Commodore, 42nd St. & Lexington Ave., New York 17, N. Y. 6:00-7:00 p.m. Reception, Grand Foyer of East Ballroom, courtesy American Cyanamid Company. 7:00-8:00 p.m. Dinner. Informal. Honorary Chairman, Dr. Wallace P. Cohoe. Toastmaster, John Kotrady. Introduction, Dr. Robert C. Swain. Presentation of Honorary AIC Membership to Dr. Milton C. Whitaker, retired vice-president, American Cyanamid Co., Dr. Donald B. Keyes. Honor Recipient's Address, Dr. Milton C. Whitaker. Reservations: Shepherd Stigman, Foster D. Snell, Inc., 29 W. 15th St., New York 11, N. Y.

Feb. 24, 1955. New York Chapter. The New York Times Dining Room, 229 W. 43rd St., New York, N. Y. Dinner 6:00 p.m. Subject: "Advancing Yourself in Chemistry in the Pharmaceutical and Medical Fields." Question and answer period. Presiding Chairman, John Kotrady. Reservations ($2.75), Shepherd Stigman, Foster D. Snell, Inc., 29 W. 15th St., New York 11, N. Y.

Apr. 28, 1955. New York Chapter. The New York Times Dining Room, 229 W. 43rd St., New York, N. Y. Dinner 6:00-7:30 p.m. Presentation of Awards to Student Medalists. Speaker Dr. A. W. Fisher, Jr., Arthur D. Little, Inc., "Algæ as a Potential Future Source of Food." Question and answer period. Presiding chairman, John Kotrady. Reservations ($2.75), Shepherd Stigman, Foster D. Snell, Inc., 29 W. 15th St., New York 11, N. Y.

May 12, 13, 14, 1955. AIC Annual Meeting. LaSalle Hotel, Chicago 2, Ill.

May, 1956. AIC Annual Meeting. Tentatively scheduled for Washington, D.C.

Opportunities

Doris Eager, M.A.I.C.

AIC members who are seeking positions may place notices in this column without charge.

Positions Available

Research Chemist: M.S. or Ph.D. in organic or physical chemistry; to carry out studies in field of cellulose and its derivatives. (No. 26)

Sr. Research Chemist: B.S. with 5 yrs. or Ph.D. with 2-3 yrs. textile chemistry experience; for application of chemical treatments to fibers, yarns and fabrics. (No. 28)

Research Chemist: Sr. Research Chemist: Research Chemist: Three openings for chemists with degrees in organic chemistry; industrial experience in polymer synthesis; capable of fundamental research work in the field of plastics. (No. 30, 13 & 14)

Research Chemist: B.S. or higher with experience in industrial textiles; research and development in synthetic fiber spinning, including processes for producing new fibers and improving existing ones. (No. 29)

All above positions are in metropolitan New York area. Reply, giving number of position to Box 91, THE CHEMIST.

Chemists or Chemical Engineers: For production, sales or research in plastics industry. Age 21-35, New England. Salary $350 up, depending on experience. Box 93, THE CHEMIST.

Director of Research & Development: To improve quality of existing products, reduce cost of products, develop new products and study new materials. Should have ten or more years experience in rubber and plastic field. Age 35-45. Salary $13,500-$16,000. Box 95, THE CHEMIST.

Money Available

Ex-chemical manufacturer of ultramarine blue is interested in investing in ultramarine — or other small chemical enterprise. Box 900, THE CHEMIST.

Chemists Available

Organic Chemist, M.A.I.C., B.S. 1949. Diversified experience in synthesis, pharmaceuticals, sugars and intermediates. Some control and isotopes. Desires challenging opportunity. Box 90, THE CHEMIST.

Chemical Consultant, F.A.I.C., 27 years experience in development, supervision of production and management of water-base paints (latex, alkyd, polyvinyl acetate, etc.), rubber and resin adhesives (floor, wall and acoustical tile, wall board, leather, rubber etc.) and wax emulsions. Desires connection on consultation or retainer basis. Has own laboratory. Will consider responsible permanent position with progressive company. Box 92, THE CHEMIST.

Supervisory Chemist; M.S. 7 years broad experience in surfactants, agricultural chemicals, fatty derivatives. Seeks position offering increased responsibilities, technical service, liaison, sales. Administrative and supervisory experience. Age 33, family. Box 94, THE CHEMIST.

New facilities: To be erected by General Aniline & Film Corp., to expand production of its chlorine-caustic plant at Linden, N. J. An expenditure of nearly $5,000,000 is involved.

For Your Library

Chemical Calculations, An Introduction to the Use of Mathematics in Chemistry

By Sidney W. Benson, professor of chemistry, University of Southern Calif. John Wiley & Sons, Inc. pp. IX & 217. $2.95.

Many chemists have already acquired a great deal of knowledge of chemical theory, chemical facts and figures. They also know the rules of mathematical reasoning from simple arithmetic to advanced calculus.. Yet when they are confronted with a situation that requires the application of their mathematical tools to chemical facts, they have difficulty in expressing themselves in mathematical language. Noticing this difficulty with his students, the author has shown in a logical and yet eminently practical way how to say it mathematically. Even the mature chemist will be glad to have Dr. Benson's book on the desk or in the lab to check it like the dictionary of a foreign language, though the language of mathematics may not be too foreign to him.

—Dr. Francis Joseph Weiss, F.A.I.C.

Advances in Enzymology

Vol. 14. F. F. Nord, Editor. Interscience Publishers, Inc. 470 *pp.* 9½" x 6½". $9.25.

In this volume is presented a well-selected series of reviews on energy transfer within the cell (in German); pantathine and related growth factors; metabolism of phenylalamine and tyrosine; oxidation of proteins by tyrosine and peroxidase; chemistry of organic catalysis (in German); enzymic isomerization; suggestions for a classification and nomenclature of enzymes; techniques used in the study of proteins (in French); adsorption studies of enzymes and other proteins; procedures in the isolation of enzymes.

—Dr. Henry Tauber, F.A.I.C.

General Chemistry

By Linus Pauling. W. H. Freeman & Co. San Francisco. 722 *pp.* 6½" x 9½". $6.00.

This is a lucid textbook of general chemistry for college students.

Flow Properties of Disperse Systems

Editor, J. J. Hermans. Vol V. of Deformation and Flow Series. Interscience Publishers, Inc. & North Holland Publishing Co. Amsterdam. 445 *pp.* $9.90.

Edited by a professor of the University of Leiden, this volume covers a wide and diverse field but presents a surprising unity in the methods used and the lines of thought followed — and this in spite of the fact that the articles have been written by men (and one woman) working in different countries (Holland, England and France) and in institutions having little in common.

Dr. Frederick A. Hessel, F.A.I.C.

Applied Atomic Energy

By K. Fearnside, E. W. Jones and E. N. Shaw. Philosophical Library. 157 *pp.* 5" x 7½". $4.75.

This is a most entertaining presentation of the uses of atomic energy and its products. This volume is evidence of the rapid flow of that intangible fluid — ideas — to the British and French reactor stations. The main theme of this book is isotopes and their uses, compactly treated.

Physical Properties of Solid Materials

By C. Zwikker. Interscience Publishers. 300 *pp.* 6½" x 10". $8.75.

This book is an advanced treatise on the physical properties of solids, including electronics and magnetism, treated in a thorough yet practical manner.

The Screen Projection of Chemical Experiments

By E. J. Hartung. Cambridge University Press. 291 pp. 5⅜" x 8⅞". $4.75.

Here are two-hundred and fifty experiments which may be enlarged and projected on a screen, detailed as to equipment and methods. It occurs to the reviewer that this method of presentation interspersed with the Alexander Smith method of fire and noise would make chemistry impressive.

—Dr. John A. Steffens, F.A.I.C.

Chemical Books Abroad

Rudolph Seiden, F.A.I.C.

Georg Thieme Verlag, Stuttgart — 0 (Intercontinental Medical Book Corp., New York 16, N.Y.): *Die Bedeutung des Blutchemismus,* by Ernst Leupold; 1954, 207 pp. (102 ill., 116 tables), $11.90—Controlled experiments by the author prove conclusively that blood chemism—particularly the changes in the concentration of hormones, albumins, glucose, salt mixtures, and phosphatides play an important role in the formation and disappearance of tumors and possibly also of various dermatoses. • *Lehrbuch der organischen Chemie;* by Paul Karrer; 12th ed., 949 pp., $14.20—An English translation of this well-known textbook was reviewed in the January, 1951, issue of THE CHEMIST. Prof. Karrer treats the entire field of organic chemistry systematically and in accordance with the number of functional groups. Electron theory and reaction mechanisms of many compounds are also discussed. Emphasis is put on natural products, intermediates, dyestuffs, as well as substances known for their biological or physiological action.

Wissenschaftliche Verlagsgesellschaft, Stuttgart 1: *Gehes Codex,* by Georg Otto; 8th ed., 927 pp., DM 75.—For decades the "Gehe" has been regarded as the "bible" of pharmaceutical chemists. It lists in alphabetical order more than 13,000 specialties available in Germany and gives information concerning composition, indications, market form, and manufacturer's address. Annual supplements keep this comprehensive work up to date.

Johann Ambrosius Barth, Leipzig C 1: *Theoretische Chemie,* by K. L. Wolf; 3rd ed., 742 pp. (282 ill, 121 tables) DM 38.—This is a brilliant introduction into theoretical chemistry; it is written from the standpoint of modern atom theory.

Collection Armand Colin, Paris Ve: *Ciments et Betons,* by J. C. de Langavant; 1953; 192 pp., paper covers Fr. 250.—A discussion of the properties and uses of various types of cement and concrete.

Springer-Verlag, Berlin W 35: *Theorie der chemischen Bindungen,* by H. Hartmann; 1954, 357 pp. (53 ill.), DM 49.80.—A presentation of the theoretical principles of chemical linkage, in accordance with quantum theory. Prof. Hartmann gives special attention to such subjects as the single-body and many-body problems; electronic systems; the various types of simple, complex, unsaturated, and aromatic compounds; atomic, ionic, metallic, and molecular lattices; energy of activation; and reactivity.

Scheduled: A loose-leaf handbook of economic resources of Texas, Oklahoma, Arizona, New Mexico, Arkansas, and Louisiana, for publication next year by Southwest Research Institute, San Antonio, Texas. Dr. Ralph S. Thompson is editor. The *Southwestern Resources Handbook* will be kept up to date by annual supplements.

Announced: By Harry B. McClure, F.A.I.C., president of Carbide & Carbon Chemicals Company, the appointment of Robert N. Graham and William F. Reich, Jr., as executive vice presidents.

Expanded: Production of fiber glass mats by Bigelow Fiber Glass Products Division of Bigelow-Sanford Carpet Co., Inc., 140 Madison Ave., New York 16, N. Y.

Something New

"Testing Instruments." Catalog. Gardner Laboratory, Inc., Bethesda, Md.

"Magnets in Many Devices." Descriptive leaflets. Eriez Manufacturing Co., Erie, Pa.

"Oil Separators," Catalog. "Dowtherm Heaters — Equipment & Data," 27-p. Booklet. "Combustion Accessories." Eclipse Fuel Engineering Co., 1001 Buchanan St., Rockford, Ill.

"Electrograf, Series 54." "Saybolt Viscosimeter." Leaflets. "Laboratory Apparatus Catalog." Labline, Inc., 217-221 N. Desplaines St., Chicago 6, Ill.

"Electronic Indicator for Bridge Type Measurements," Data Sheet 10.0-12. "Limit Switch—sealed housing." Data Sheet 10.0-12. "Level Measures — Pneumatic Balance System," Bull. 2291. Station 213, Minneapolis-Honeywell Regulator Co., Wayne & Windrim Aves., Philadelphia 44, Pa.

"Carbon Blacks under the Electron Microscope." 100 pp. publication. Godfrey L. Cabot, Inc., 77 Franklin St., Boston 10, Mass.

"Electrometric Instruments." Catalog & Bull. 2210, 2248, 2247. American Instrument Co., Silver Spring, Maryland.

"Thiophenol," "Beta-Mercapto-Ethylamine Hydrochloride for radiation sickness." "Phenylmercaptoacetic Acid." Samples and data. Evans Chemetics, Inc., 250 E. 43rd St., New York 17, N. Y.

"New Organic Chemicals Available." Leaflet. Bios Labs., Inc., 17 W. 60th St., New York 23, N. Y.

"PV M/MA. Polymethyl vinyl ethermaleic anhydride Copolymer." Information. General Aniline & Film Corp., Commercial Development Dept., 435 Hudson St., New York 14, N. Y.

"Electronic Controller-Indicator." "Jar Bath." Information. Blue M Electric Co., 306 W. 69th St., Chicago 21, Ill.

"Meta Substituted Phenols for water repellency on fabrics." Technical Data Sheets. Chemical Div., Irvington Varnish & Insulator Co., Irvington 11, N. J.

"Vacuum Pump Care," Handbook. "Pharmaceutical Equipment," condensed catalog, Bull. 630. "Toggle Molding Press", folder. F. J. Stokes Machine Co., 550 Tabor Road, Philadelphia 20, Pa.

"What's New for the Laboratory." Apparatus catalog. Scientific Glass Apparatus Co., Inc., Bloomfield, N. J.

"Chemistry of Diesel Locomotive Maintenance." 146 pp. Public Relations Dept., American Locomotive Co., Schenectady 5, N. Y.

"Electronic Controllers." Descriptive circulars. Fielden Instrument Div., Robertshaw Fulton Controls Co., 2920 No. 4th St., Philadelphia 33, Pa.

"Laboratory Furniture & Utility Equipment." Catalog AK-54. Schaar & Co., 754 W. Lexington St., Chicago 7, Ill.

"Laboratory Blender. Twin Cone Lucite." Catalog 12 & Bull. 405. The Patterson-Kelley Co., Inc., 633 Warren St., East Stroudsburg, Pa.

"Vacuum Dryer — Tumbling Cone Form Agitation." Patterson Foundry & Machine Co., East Liverpool, Ohio.

"Iron 'Tetrine' & Related Products." Bulletin & samples. "Acetylated Monoglycerides — Non-Hygroscopic Waxy Coating." Information. Glyco Products Co., 26 Court St., Brooklyn, N. Y.

Condensates

Ed. F. Degering, F.A.I.C.

Powdered magnesium-fueled engines, according to Joseph H\ Scharen of Reade Manufacturers, may step in when petroleum is exhausted. Three pounds of powdered magnesium can produce horsepower equivalent to that of thirty gallons of aviation gasoline.

The foaming that accompanies many industrial operations in which liquids or semi-solids are vat-heated or distilled can now be controlled safely and effectively by Antifoam A Spray, a Freon-aerosol silicone de-foaming agent.

No privilege exists that is not inseparably bound to a duty.

—PIERRE S. DU PONT

We seem to be realizing that the independence which comes with exercising our privilege, is vastly more satisfying than the feeling of dependent security.

—GORDON MONFORT

Laboratory gowns made of spun lead glass offer protection from x-rays and beta-radiation.

Report on Scientific Manpower

IN THE August issue of THE CHEMIST, page 344, a letter sent to Maj. Gen. Lewis B. Hershey, director, Selective Service System, was published. Gen. Hershey has now replied to this letter as follows:

To the Secretary:

Your letter has been brought to my attention.

Our basic differences of opinion seem to concern the provisions of the Universal Military Training and Service Act of 1951, as amended.

It serves little purpose for us to debate details when we disagree so definitely, not only on the intention of Congress but even as to what the present law says.

It seems almost inconceivable that responsible individuals would charge public officials with disregard of the law unless they were very conversant with the law. Yet, it seems that what the law was in 1944 or in 1948 is quoted as authority for administration now. Congress saw fit to change the title from "Selective" to "Universal." The same Congress saw fit to increase liability for all registrants deferred. The interpretations of the Director of Selective Service of the meaning of this law have been known by the 83rd Congress throughout its life. Nothing was done by that Congress to change the interpretations of the Director.

I might agree or disagree with the plans of the American Institute of Chemists for the overall handling of manpower if they were presented more completely. The solution of problems by a creation of a governmental agency without knowing the function of the agency, or how it is to operate has never been approved by me.

—LEWIS B. HERSHEY, *Director*
Selective Service System

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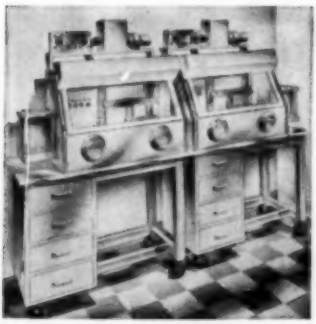

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